Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Structure and transport of $LaFeO_3$ - Sm_2CuO_4 superlattices[1]
FLAVIO Y. BRUNO, A. RIVERA-CALZADA, C. LEON, GFMC, Universidad Complutense de Madrid, Madrid 28040, Spain, J. GARCIA-BARRIOCANAL, European Synchrotron Radiation Facility, Grenoble 38043, France, M. VARELA, S.J. PENNYCOOK, Oak Ridge National Laboratory, Oak Ridge TN 37831, J. SANTAMARIA, GFMC, Universidad Complutense de Madrid, Madrid 28040, Spain —
When materials with different work functions are stacked to form a superlattice, charge transfer occurs until the electrostatic potential due to charge build up compensates the difference in work functions. This interfacial charge transfer process is a new route to dope materials. We have grown fully epitaxial superlattices consisting of Sm_2CuO_4 (SCO), the parent compound of the electron doped superconducting cuprates, and $LaFeO_3$ (LFO) an antiferromagnetic insulator. A detailed structural characterization by means of x-ray diffraction, scanning transmission electron microscopy, and atomic force microscopy, demonstrates the high structural quality of our samples. We will show electronic transport measurements of the superlattices, and SCO and LFO individual thin films supporting the possibility of electron doping the Sm_2CuO_4 in these samples.

[1]Work at UCM supported by MAT2008 06517, at ORNL supported by the Division of Materials Sciences and Engineering of the US DOE.

Flavio Y. Bruno
GFMC, Universidad Complutense de Madrid, Madrid 28040, Spain

Date submitted: 25 Nov 2009 Electronic form version 1.4